Swimming Pool Heat Pump

（THP04N~THP28Ns）

INSTALLATION AND USER MANUAL

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Thank you for choosing our product and your trust in our company. This manual is to provide you with necessary information for optimal use and maintenance, please read it carefully before starting the product to avoid unnecessary harm or damage to the product and keep it for subsequent use.

I. Application

1- Set swimming pool water temp efficiently and economically to provide you comfort and pleasure.

2- User may choose the model technical parameter according to professional guide, this series of swimming pool heater has been optimized in factory (refer to technical parameter table).

II. Features

1- High efficient titanium heat exchanger.
2- Sensitive and accurate temp control and water temp display.
3- High pressure and low pressure protection.
4- Exceeding low temp auto stop protection.
5- Temp control compulsory defrosting.
6- International brand compressor.
7- Easy installation and operation.

III. Technical Parameter

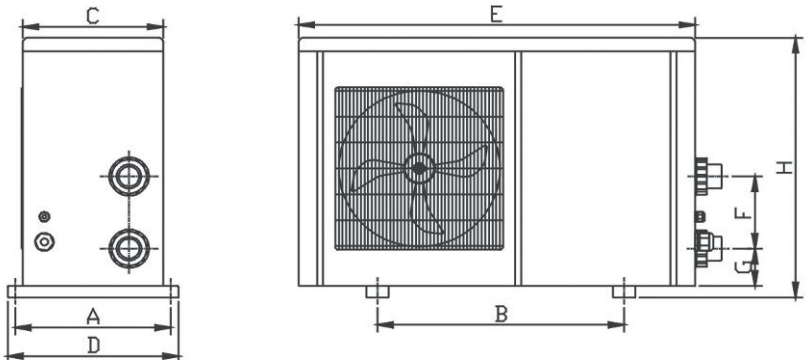
Model	THP04N	THP05N	THP07N	THP09N	THP12N	THP15N	THP21N	THP21Ns	THP28Ns
Performance Condition: Air 26℃, Water 26℃									
Heating Capacity (kW)	3.6	5	6.5	8.5	11.5	15	21	22	28
C.O.P.	5.2	5.3	5.2	5.2	5.3	5.2	5.1	5.2	5.3
Performance Condition: Air 15℃, Water 26℃									
Heating Capacity (kW)	2.7	3.7	5	6.5	8.5	11	15.6	16	21
C.O.P.	4.1	4.3	4.2	4.3	4.3	4.2	4.2	4.3	4.3
Advised Water Flux m^3/h	2.5	3	3.5	5	5-7	6.5-8.5	8-10	8-10	10-12
Power Supply	220-240V/1Ph/50Hz							380-415V/3Ph/50Hz	
Rated Power	0.66	0.86	1.19	1.51	1.98	2.62	3.69	3.72	4.88
Rated current	3.0	3.9	5.4	6.9	9.0	11.9	16.8	5.6	7.4
Water Pipe In-out Spec mm	50	50	50	50	50	50	50	50	50
Net Weight / Gross Weight Kg	31/36	35/40	40/45	52/57	66/70	72/76	127/137	127/137	137/147

Notice:

1. This machine can work well under air temp 0℃～+43℃, efficiency will not be guaranteed out of this range. Please take into consideration that the pool heater performance and parameters are different under various conditions.

2. Related parameters are subject to adjustment periodically for technical improvement without further notice. For details please refer to nameplate.

IV. Dimension



Size (mm) / Name / Model	A	B	C	D	E	F	G	H
THP04N	275	395	266	300	641	260	73	493
THP05N	275	400	267	300	755	200	80	505
THP07N	275	400	267	300	755	200	80	505
THP09N	330	580	285	350	930	280	88	550
THP12N	330	650	300	350	1000	280	88	630
THP15N	330	650	300	350	1000	280	88	630
THP21N(s)	438	770	425	470	1120	350	88	950
THP28Ns	438	810	425	470	1180	600	88	950

※ Above data is subject to modification without notice.

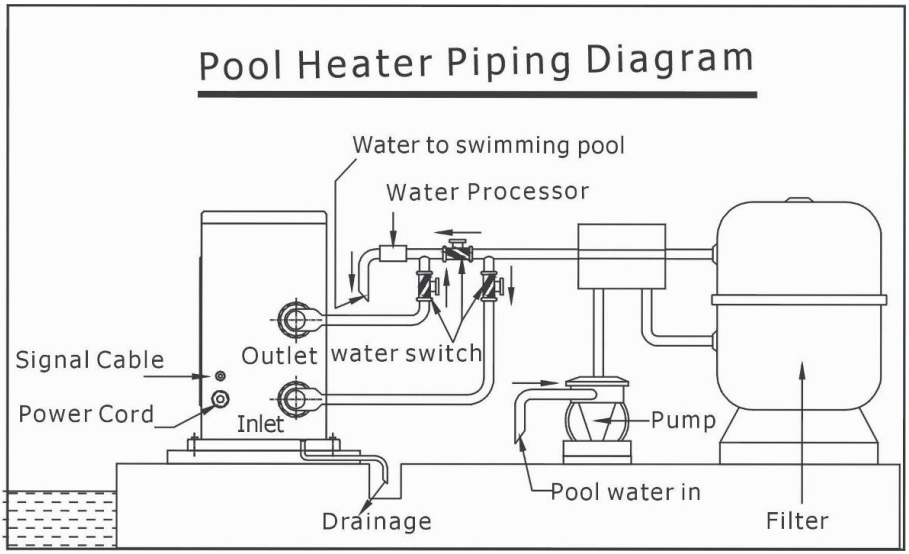
Note:

The diagram above is the specification of the pool heater, for technician's installation and layout reference only. The product is subject to adjustment periodically for improvement without further notice.

V. Installation instruction

1. **Water pipes connection**.

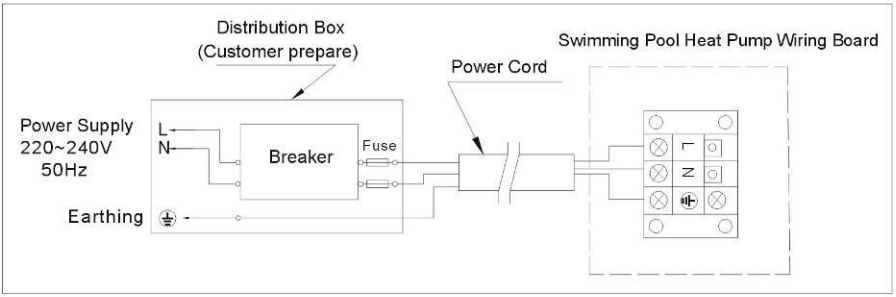
- The water flow through this machine needs to be driven by an appended water pump (prepared by the user).The recommended pump specification-flux is shown on the product specification and Max.lift ⩾10m;
- Pipe length between heat pump and swimming pool should not be longer than 10m.



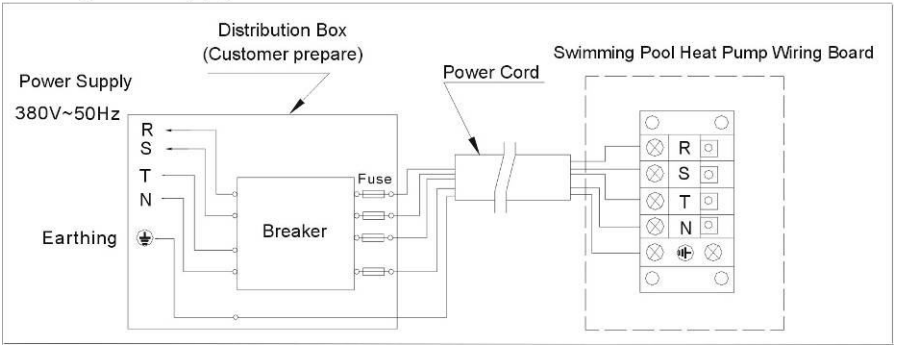
Note：The drawing is just for demonstration, and layout of the pipes is only for reference

2. Electric Wiring Diagram

A.For power supply:220~240V 50Hz



B.For power supply:380V 50Hz



Note：The swimming pool heater must be earthed well.

Options for protecting devices and cable specification

MODEL		THP04N	THP05N	THP07N	THP09N
Breaker	Rated Current A	6	15	15	15
	Rated Residual Action Current mA	30	30	30	30
Fuse A		7	15	15	20
Power Cord (mm^2)		3×1.5	3×2.5	3×2.5	3×2.5
Signal cable (mm^2)		3×0.5	3×0.5	3×0.5	3×0.5

MODEL		THP12N	THP15N	THP21N	THP21Ns	THP28Ns
Breaker	Rated Current A	20	25	40	15	20
	Rated Residual Action Current mA	30	30	30	30	30
Fuse A		20	25	40	15	30
Power Cord (mm^2)		3×2.5	3×4	3×6	5×2.5	5×4
Signal cable (mm^2)		3×0.5	3×0.5	3×0.5	3×0.5	3×0.5

※ Above data is subject to modification without notice.

Note: The above data is adapted to power cord ≤ 10 m. If power cord is ＞10 m, wire diameter must be increased. The signal cable can be extended to 50 m at most.

3. Installation instruction and requirement

The swimming pool heater must be installed by a professional team. The users are not qualified to install by themselves, otherwise damage may happen to the heater or threat the body safety of the user.

A. Installation

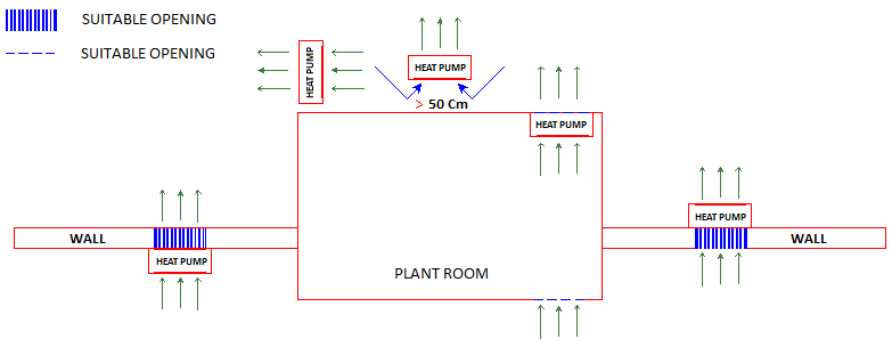
The location of the swimming pool heat pump is very important for efficient operation, think about the following factors when choose the proper place:

- ✧ Avoidance of air recirculation
- ✧ Easy for wire and pipe connection and Water pipe line of long water lines (not longer than 10m.) from heater to pool.
- ✧ Easy for maintenance.
- ✧ Drainage of condensation.

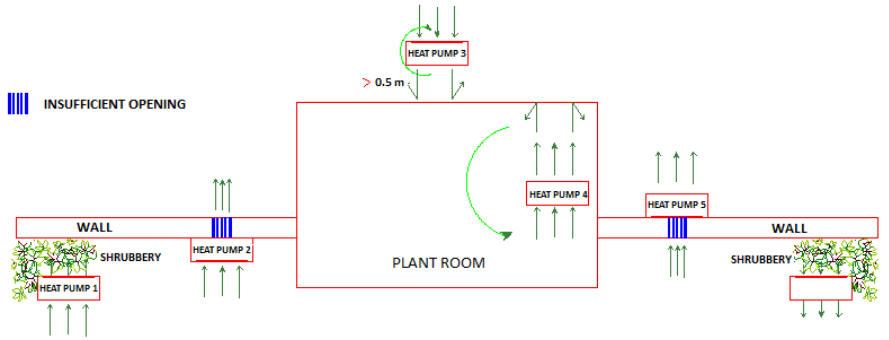
Pay attention to the following points:

1. The heat pump must be installed OUTSIDE in a well ventilated place to avoid air recirculation or in a place with adequate room area both for installation and maintenance. Please refer to the following illustration:

Good Installation:



Bad Installation:



What's wrong in the above installation?

Heat Pump 1 & 6: Plantations protect cold air movement and allow cross circuit of cold air.

Heat Pump 2: Restricted openings reduce the performance of heat pump, troubles compressor.

Heat Pump 3: These choke up compressor and allow fail /draw more current.

Heat Pump 4: This reduces ambient air temperature by getting mixed inside room air and reduces COP, Hence longer running cycle.

Heat Pump 5: This reduces total ambient air available and reduces COP, Hence longer running cycle.

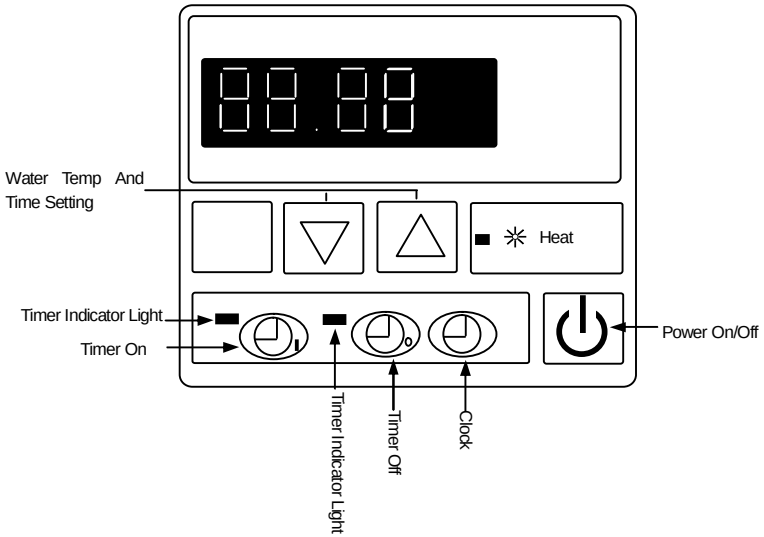
B. Wiring

1) Connect to appropriate power supply; the voltage should comply with the rated voltage of the products.
2) Earth the product well.
3) Wiring must be handled by a professional technician according to the circuit diagram.
4) Set leakage protector according to the local code for wiring (leakage operating current ⩽ 30mA).
5) The layout of power cable and signal cable should be arranged in order so as to not affect each other.

C. Switch on after finishing all wiring construction and double check.

VI. Operation instruction

Controller Keypad



CLOCK TIME ON TIME OFF

HEAT

1. Operation Display

A. The display shows Time when the machine is off;

B. The display shows Temperature of the swimming pool water when the machine is on.

2. Water temperature setting

A. Available no matter the machine is on or off;

B. Press the key △ or ▽ to set water temperature. The controller indicates twinkling temp. Press △ or ▽ to adjust to your required water temp;

C. 5 seconds later, the controller display will return to the normal mode.

D. When you want to check setting temperature, press △ or ▽ to see the current setting.

3. Time setting

A. Available no matter the machine is on or off;

B. Press key to set time. When the clock on the screen is twinkling, press again to set hour. Use △ and ▽ to adjust. Before the twinkling stops, press to set minute Use △ and ▽ to adjust. After adjusting, press and water temperature will be seen. 30 seconds later, the controller display will be back to the normal mode.

4. Timer on and off

A. Press to set timer on. When the indicator light is on and the time is twinkling, press again to set hour. Use △ and ▽ to adjust. Before the twinkling stops, press to set minute Use △ and ▽ to adjust. After adjusting, press "TIMER ON" and water temperature will be seen. 30 seconds later , the controller display will return to the normal mode;

B. Press to set timer off.. When the indicator light is on and the time is twinkling, press again to set hour. Use △ and ▽ to adjust. Before the twinkling stop, press to set minute Use △ and ▽ to adjust. After adjusting, press and water temperature will be seen. 30 seconds later, the controller display will be back to the normal mode;

C. Cancel timer on and off

Press or to cancel timer on and off. When the number is twinkling, press . When timer indicator light is off and LED shows water temperature, the timer on and off is canceled. 30 seconds later, the controller display will be back to the normal mode.

VII. Testing

1. Inspection before use

A. Check installation of the whole machine and the pipe connections according to the pipe connecting drawing;

B. Check the electric wiring according to the electric wiring diagram; and earthing connection;

C. Make sure that the main machine power switch is off;

D. Check the temperature setting;

E. Check the air inlet and outlet.

2. Trial

A. The user must "Start the Pump before the Machine, And Turn off the Machine before the Pump", or the machine will be damaged;

B. The user should start the pump, check for any water leakage; and then set suitable temperature on the thermostat, and then switch on power supply;

C. In order to protect the swimming pool heater, the machine is equipped with a time lag starting function, when starting the machine, the blower will start running 1 minute earlier than the compressor;

D. After the swimming pool heater starts up, check for any unusual noise from the machine.

VIII. Precautions

1. Attention

A. Set proper temperature in order to get comfortable water temperature; to avoid overheating or overcooling;

B. Please don't stack substances that can block air flow near inlet or outlet area, or the efficiency of the heater will be reduced or even stopped;

C. Please don't put hands into outlet of the swimming pool heater, and don't remove the fan grill at any time;

D. If there are unusual conditions such as noise, smell, smoke and electrical leakage, please switch off the machine immediately and contact the local

dealer. Don't try to repair it yourself;

E. Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire;

F. In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heater. During running period of the swimming pool heater, please use a recommended cover on the swimming pool;

G. Connecting pipes of the swimming pool and the heater should be ≤10m, or the heating effect of the heater cannot be ensured;

H. This series of machines can achieve high efficiency under air temperature of +15℃～+25℃.

2. Safety

A. Please keep the main power supply switch far away from the children;

B. When a power cut happens during running, and is restored afterwards, the heater will start up automatically. So please switch off the power supply when there is a power cut, and reset temp when power is restored;

C. Please switch off the main power supply in lightning and storm weather to prevent from possible damage to the machine;

D. If the machine is not in use for a long time, please cut off the power supply and drain water out of the machine by opening the tap of inlet pipe.

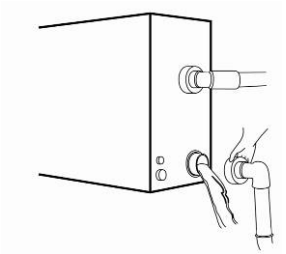
IX. Maintenance

Caution: Danger of electric shock

"Cut off" power supply of the heater before cleaning, examination and repairing

A. In winter season when you don't swim:

1. Cut off power supply to prevent any machine damage
2. Drain water out of the machine.



!!Important:
Unscrew the water nozzle of inlet pipe to let the water flow out.
When the water in machine freezes in winter season,the titanium heat exchanger may be damaged.

3. Cover the machine body when not in use.

B. Please clean this machine with household detergents or clean water; NEVER use gasoline, thinners or any similar fuel.

C. Check bolts, cables and connections regularly.

X. Trouble shooting for common faults

	Phenomenon	Reason
Not failure	A. Noticeable White vaporous cold air or water B. Plopping sound	A. The fan motor stops automatically for defrost. B. Sound from the solenoid valve when starting and ending of defrost. C. During operation or just stop, sound like water flow, and largely in 2~3 minutes of starting the machine. This Sound comes from flowing refrigerant or dehumidification. D. The plopping sound during the operation is caused by expand on heating and contract on cooling of the heat exchanger when temperature varies.
	Automatic start or stop	Check whether there is malfunction on the timer.
Recheck	Swimming pool heat pump dose not run	A. Power supply failure B. Check manual power supply switch to make sure it is on. C. Fuse burned. D. If protector has started (operating light is on) E. Set timer on (the operating light is on)
	Running but not heating	Check if there is block on air inlet and outlet of the unit.

Note: If the following conditions happen, please stop the machine immediately, and turn off the manual power supply switch, then the contact local dealer.

a）Inaccurate switch action;

b）The fuse is frequently broken or leakage circuit breaker jumped.

Failure code

NO.	Failure code	Failure description	Action
1	EE 1	High pressure protection	Contact your dealer.
2	EE 2	Low pressure protection	Contact your dealer.
3	EE 3	Low water pressure protection	1. Check if there is no water through the machine; make sure the pump is on. 2. Or contact your dealer.
4	EE 4	A. Single phase machine : failure connection due to loose wire terminal of PROT2 on the PC board B. Three phase machine : 3 phase sequence protection	Contact your dealer.
5	PP 1	Pool water temp sensor failure	Contact your dealer.
6	PP 2	Heat only type : Exhaust temp sensor failure	Contact your dealer.
7	PP 3	Heating coil pipe temp sensor failure	Contact your dealer.
8	PP 4	Gas return temp sensor	Contact your dealer.
9	PP 5	Air temp sensor	Contact your dealer.
10	PP 6	Compressor exhaust overload protection	Contact your dealer.
11	PP 7	When the temperature ＜ 0℃,auto stop for protection (Not Failure)	Machine Auto-protection

XI. Warranty conditions

The following exclusions apply to the Warranty given by Certikin. No claims will be accepted if:

1. The heat pump is wrongly sized for application.

2. The installation of the heat pump is not in accordance with procedures as defined by Certikin.

3. The heat pump has been worked upon or is adjusted by non professional or authorized personnel.

4. The water flow is not within advised limits.

5. The water pH level or chemical balance is not within ranges set forth as below:

Item	Normal Range
Acidity pH	7.2-7.8
Total Alkalinity, as CaCO3	80-120 ppm
Total Hardness, as CaCO3	150-250 ppm
Total Dissolved Solids	1000 ppm
Maximum Salt Content	35000 ppm
Free Chlorine Range (Domestic pool)	1-2 ppm
Free Chlorine Range(Commercial pool)	3-6 ppm
Superchlorination	30 ppm for 24 hours (Max.)
Bromine	2-5 ppm
Baquacil	25-50 ppm
Ozone	0.9 ppm (Max.)
Maximum Copper Content	1 ppm
Aquamatic Ionic Purifier	2 ppm (Max.)

6. The heat pump or the heat exchanger has suffered frost damage.